

## MEASUREMENT

15 JULY 2013

### Lesson Description

In this lesson we:

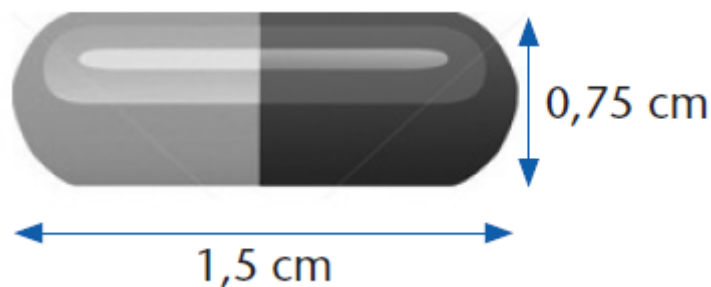
- Work through a few examples to calculate Volume, Surface Area and Scale factors

### Key Concepts

| 3-D SHAPE  | VOLUME   | SURFACE AREA   |
|--|--|--|
| <b>RIGHT PRISM</b><br>A solid with two characteristic faces and all other faces perpendicular to the char. Faces | $V = \text{Area of char face} \times \text{perp height}$   | $S.A. = \text{Area of all the faces}$  |
| <b>PYRAMID</b><br>A solid with a polygon as a base and with triangles as the other faces meeting at the apex.    | $V = \frac{1}{3} \text{Area of the base} \times \text{pyramid's perp height}$<br><br>$V = \frac{1}{3}Ah$ | $S.A. = \text{Area of all the faces}$  |
| <b>SPHERE</b><br>Perfectly round object  | $V = \frac{4}{3}\pi r^3$   | $S.A. = 4\pi r^2$  |
| <b>CONE</b><br>Cones have a circular base and a curved lateral face meeting at an apex                           | $V = \frac{1}{3} \text{Area of the base} \times \text{cone's perp height}$<br><br>$V = \frac{1}{3}Ah$    | $S.A. = \text{Area of all faces}$<br><br>$S.A. = \pi r^2 + \pi rs$ , where $s$ is the slant height |

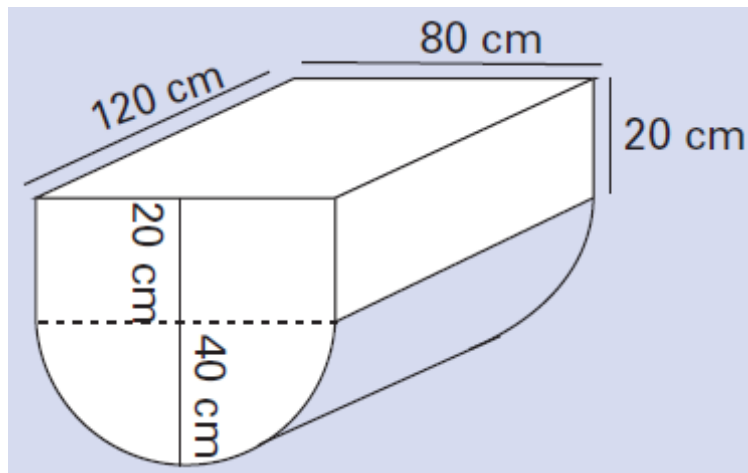
### Questions

#### Question 1



Calculate the Volume and the Surface Area of the vitamin pill above.

## Question 2

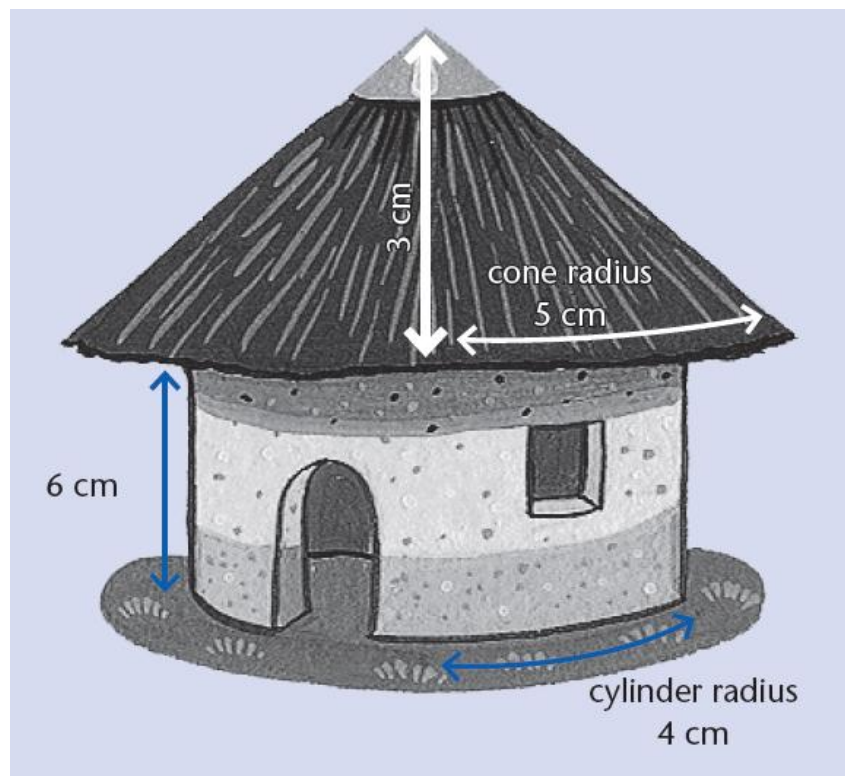


Calculate the Surface Area and Volume of the object above.

## Question 3

If a cone and sphere have the same volume and radius, calculate the height of the cone in terms of  $r$ , the radius.

## Question 4



Benjamin has a model of a rondavel and wants to increase it by a scale factor of 3. Calculate the Surface Area and Volume of the original and new model.